STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

April 30, 2014

Mr. Steven Rolfe, Environmental Manager
e-copy: Steven.Rolfe@us.agc.com
AGC Class Company North America
600 AFG Road
Church Hill, TN 37642

Subject: **NPDES Permit No. TN0002631**
AGC Flat Glass North America - Greenland Plant
Church Hill, Hawkins County, Tennessee

Dear Mr. Rolfe:

In accordance with the provisions of the Tennessee Water Quality Control Act, Tennessee Code Annotated (T.C.A.), Sections 69-3-101 through 69-3-120, the Division of Water Resources hereby issues the enclosed NPDES Permit. The continuance and/or reissuance of this NPDES Permit is contingent upon your meeting the conditions and requirements as stated therein.

Please be advised that a petition for permit appeal may be filed, pursuant to T.C.A. Section 69-3-105, subsection (i), by the permit applicant or by any aggrieved person who participated in the public comment period or gave testimony at a formal public hearing whose appeal is based upon any of the issues that were provided to the commissioner in writing during the public comment period or in testimony at a formal public hearing on the permit application. Additionally, for those permits for which the department gives public notice of a draft permit, any permit applicant or aggrieved person may base a permit appeal on any material change to conditions in the final permit from those in the draft, unless the material change has been subject to additional opportunity for public comment. Any petition for permit appeal under this subsection (i) shall be filed with the Technical Secretary of the Water Quality, Oil and Gas Board within thirty (30) days after public notice of the commissioner's decision to issue or deny the permit. A copy of the filing should also be sent to TDEC's Office of General Counsel.

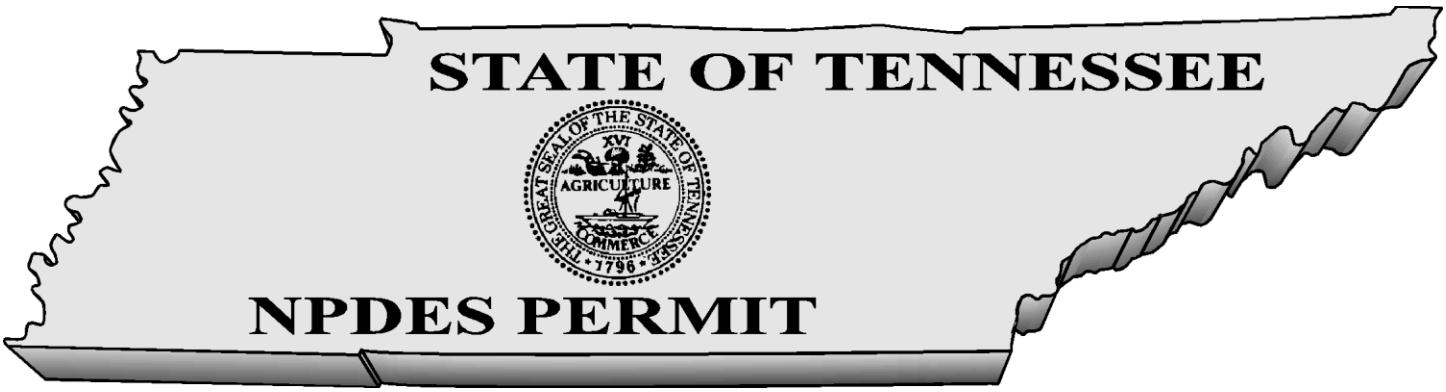
If you have questions, please contact the Johnson City Environmental Field Office at 1-888-891-TDEC; or, at this office, please contact Ms. Souraya Fathi at (615) 532-0485 or by E-mail at *Souraya.Fathi@tn.gov*.

Sincerely,

Vojin Janjić
Manager, Water-Based Systems

Enclosure

cc: Permit File
Johnson City Environmental Field Office
Mr. Don Frawley, AGC Flat Glass North America Plant Manager, AGC Flat Glass North America - Greenland Plant, Don.Frawleyl@us.agc.com



No. TN0002631

Authorization to discharge under the
National Pollutant Discharge Elimination System (NPDES)

Issued By

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

Under authority of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 et seq.) and the delegation of authority from the United States Environmental Protection Agency under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251, et seq.)

Discharger:	**AGC Flat Glass North America - Greenland Plant**
is authorized to discharge:	**Contact process wastewater (tempering washer), treated domestic wastewater, non-contact cooling water and storm water runoff through Outfall 004**
from a facility located:	**in Church Hill, Hawkins County, Tennessee**
to receiving waters named:	**unnamed tributary at mile 0.6 to Holston River at mile 126.5**

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on:	**June 1, 2014**
This permit shall expire on:	**May 31, 2019**
Issuance date:	**May 1, 2014**

for Sandra K. Dudley, Ph.D., P.E.
Director

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PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

AGC Flat Glass North America - Greenland Plant is authorized to discharge contact process wastewater (tempering washer), treated domestic wastewater, non-contact cooling water and storm water runoff through Outfall 004 to unnamed tributary at mile 0.6 to Holston River at mile 126.5.

These discharges shall be limited and monitored by the permittee as specified below:

(Internal Monitoring Point (IMP) 001A is used for monitoring of wastewater. Limits were set in case discharge occurs from IMP 001, through Outfall 004 and into the receiving stream.)

Description : Internal Outfall, Number : 001A, Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Flow*	Report	-	Mgal/d	Instantaneous	Five Per Week	Daily Maximum
Flow*	Report	-	Mgal/d	Instantaneous	Five Per Week	Monthly Average
Oil & Grease	<=	18.35	lb/d	Grab	Twice Per Month	Daily Maximum
Oil & Grease	<=	18.35	lb/d	Grab	Twice Per Month	Monthly Average
Phosphorus, total (as P)	<=	0.12	lb/d	Grab	Twice Per Month	Daily Maximum
Phosphorus, total (as P)	<=	0.12	lb/d	Grab	Twice Per Month	Monthly Average
Total Suspended Solids (TSS)	<=	33.48	lb/d	Grab	Twice Per Month	Monthly Average
Total Suspended Solids (TSS)	<=	50.45	lb/d	Grab	Twice Per Month	Daily Maximum
pH**	>=	6.0	SU	Grab	Twice Per Month	Minimum
pH**	<=	9.0	SU	Grab	Twice Per Month	Maximum

(IMP 002 is used for monitoring of package plant treatment performance, prior to mixing of treated domestic wastewater with wastewater being eventually discharged from Outfall 004.)

Description : Internal Outfall, Number : 002, Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
BOD, 5-day, 20 C	<=	30	mg/L	Grab	Twice Per Month	Monthly Average
BOD, 5-day, 20 C	<=	45	mg/L	Grab	Twice Per Month	Daily Maximum
Chlorine, total residual (TRC)***	<=	0.5	mg/L	Grab	Twice Per Month	Daily Maximum
E. coli	<=	941	#/100mL	Grab	Twice Per Month	Daily Maximum
E. coli	<=	126	#/100mL	Grab	Twice Per Month	Monthly Average
Flow*	Report	-	Mgal/d	Instantaneous	Weekly	Daily Maximum
Flow*	Report	-	Mgal/d	Instantaneous	Weekly	Monthly Average
Oxygen, dissolved (DO)	>=	2	mg/L	Grab	Five Per Week	Minimum
Settleable Solids	<=	0.5	mL/L	Grab	Twice Per Month	Daily Maximum
Total Suspended Solids (TSS)	<=	45	mg/L	Grab	Twice Per Month	Daily Maximum
Total Suspended Solids (TSS)	<=	30	mg/L	Grab	Twice Per Month	Monthly Average
pH**	>=	6.0	SU	Grab	Weekly	Minimum
pH**	<=	9.0	SU	Grab	Weekly	Maximum

(Outfall 004 consists of non-contact cooling, storm water runoff, process wastewater (through IMP 001A), and treated domestic wastewater (through IMP 002).)

Description : External Outfall, Number : 004, Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Chlorine, total residual (TRC)***	<=	0.011	mg/L	Grab	Weekly	Monthly Average
Chlorine, total residual (TRC)***	<=	0.019	mg/L	Grab	Weekly	Daily Maximum
Flow*	Report	-	Mgal/d	Instantaneous	Five Per Week	Monthly Average
Flow*	Report	-	Mgal/d	Instantaneous	Five Per Week	Daily Maximum
IC25 Static Renewal 7 Day Chronic Ceriodaphnia	>=	100	%	Composite	Annual	Minimum
IC25 Static Renewal 7 Day Chronic Pimephales	>=	100	%	Composite	Annual	Minimum
Oil & Grease	<=	15	mg/L	Grab	Twice Per Month	Daily Maximum
Oil & Grease	<=	10	mg/L	Grab	Twice Per Month	Monthly Average
Settleable Solids	<=	0.5	mL/L	Grab	Weekly	Daily Maximum
Temperature, water deg. C	Report	-	deg C	Grab	Twice Per Month	Daily Maximum
Total Suspended Solids (TSS)	<=	30	mg/L	Grab	Twice Per Month	Monthly Average
Total Suspended Solids (TSS)	<=	40	mg/L	Grab	Twice Per Month	Daily Maximum
pH**	>=	6.0	SU	Grab	Five Per Week	Minimum
pH**	<=	9.0	SU	Grab	Five Per Week	Maximum

*** Flow Shall be reported in Million Gallons per Day (MGD).**

**** pH analyses shall be performed within fifteen (15) minutes of sample collection.**

***** The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for TRC shall not exceed 0.05 mg/l unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL and have it available for review upon request. In cases where the permit limit is less that the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit limit.**

Additional monitoring requirements and conditions applicable to Outfall 004 include:

There shall be no distinctly visible floating solids, scum, foam, oily slick, or the formation of slimes, bottom deposits or sludge banks of such size or character that may be detrimental to fish and aquatic life.

The wastewater discharge shall not contain pollutants in quantities that will be hazardous or otherwise detrimental to humans, livestock, wildlife, plant life, or fish and aquatic life in the receiving stream.

Sludge or any other material removed by any treatment works must be disposed of in a manner, which prevents its entrance into or pollution of any surface or subsurface waters. Additionally, the disposal of such sludge or other material must be in compliance with the Tennessee Solid Waste Disposal Act, TCA 68-31-101 et seq. and the Tennessee Hazardous Waste Management Act, TCA 68-46-101 et seq.

A. MONITORING PROCEDURES

1. Representative Sampling

Samples and measurements taken in compliance with the monitoring requirements specified herein shall be representative of the volume and nature of the monitored discharge, and shall be taken after treatment and prior to mixing with uncontaminated storm water runoff or the receiving stream.

2. Sampling Frequency

If there is a discharge from a permitted outfall on any given day during the monitoring period, the permittee must sample and report the results of analyses accordingly, and the permittee should not mark the 'No Discharge' box on the Discharge Monitoring Report form.

3. Test Procedures

a. Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304 (h) of the Clean Water Act (the "Act"), as amended, under which such procedures may be required.

b. Unless otherwise noted in the permit, all pollutant parameters shall be determined according to methods prescribed in Title 40, CFR Part 136, as amended, promulgated pursuant to Section 304 (h) of the Act.

In instances where permit limits established through implementation of applicable water criteria are below analytical capabilities, compliance with those limits will be determined using the detection limits described in the TN Rules, Chapter 0400-40-03-.05(8).

The wastewater discharge must be disinfected to the extent that viable coliform organisms are effectively eliminated. The concentration of the E. coli group after disinfection shall not exceed 126 cfu per 100 ml as the geometric mean calculated on the actual number of samples collected and tested for E. coli within the required reporting period. The permittee may

collect more samples than specified as the monitoring frequency. Samples may not be collected at intervals of less than 12 hours. For the purpose of determining the geometric mean, individual samples having an E. coli group concentration of less than one (1) per 100 ml shall be considered as having a concentration of one (1) per 100 ml. In addition, the concentration of the E. coli group in any individual sample shall not exceed a specified maximum amount. A maximum daily limit of 487 colonies per 100 ml applies to lakes and Tier II waters. A maximum daily limit of 941 colonies per 100 ml applies to all other recreational waters.

4. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The exact place, date and time of sampling;

b. The exact person(s) collecting samples;

c. The dates and times the analyses were performed;

d. The person(s) or laboratory who performed the analyses;

e. The analytical techniques or methods used, and;

f. The results of all required analyses.

5. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation shall be retained for a minimum of three (3) years, or longer, if requested by the Division of Water Resources.

B. DEFINITIONS

For the purpose of this permit, ***Annually*** is defined as a monitoring frequency of once every twelve (12) months beginning with the date of issuance of this permit so long as the following set of measurements for a given 12 month period are made approximately 12 months subsequent to that time.

A ***bypass*** is defined as the intentional diversion of waste streams from any portion of a treatment facility.

A ***calendar day*** is defined as the 24-hour period from midnight to midnight or any other 24-hour period that reasonably approximates the midnight to midnight time period.

The ***Daily Maximum Amount***, is a limitation measured in pounds per day (lb/day), on the total amount of any pollutant in the discharge by weight during any calendar day.

The ***Daily Maximum Concentration*** is a limitation on the average concentration, in milligrams per liter (mg/L), of the discharge during any calendar day. When a proportional-to-flow composite sampling device is used, the daily concentration is the concentration of that 24-hour composite; when other sampling means are used, the daily concentration is the arithmetic mean of the concentrations of equal volume samples collected during any calendar day or sampling period.

Degradation means the alteration of the properties of waters by the addition of pollutants or removal of habitat.

Discharge or "discharge of a pollutant" refers to the addition of pollutants to waters from a source.

The ***geometric mean*** of any set of values is the n^{th} root of the product of the individual values where "n" is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For the purposes of calculating the geometric mean, values of zero (0) shall be considered to be one (1).

A ***Grab Sample***, for the purposes of this permit, is defined as a single effluent sample of at least 100 milliliters (sample volumes <100 milliliters are allowed when specified per standard methods, latest edition) collected at a randomly selected time over a period not exceeding 15 minutes. The sample(s) shall be collected at the period(s) most representative of the total discharge.

The ***monthly average amount***, shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

The ***monthly average concentration***, other than for *E. coli* bacteria, is the arithmetic mean of all the composite or grab samples collected in a one-calendar month period.

Pollutant means sewage, industrial wastes, or other wastes.

A ***rainfall event*** is defined as any occurrence of rain, preceded by 10 hours without precipitation that results in an accumulation of 0.01 inches or more. Instances of rainfall occurring within 10 hours of each other will be considered a single rainfall event.

A ***rationale*** (or "fact sheet") is a document that is prepared when drafting an NPDES permit or permit action. It provides the technical, regulatory and administrative basis for an agency's permit decision.

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

Waters means any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through, or border upon Tennessee or any portion

thereof except those bodies of water confined to and retained within the limits of private property in single ownership which do not combine or effect a junction with natural surface or underground waters.

C. ACRONYMS AND ABBREVIATIONS

1Q10 – 1-day minimum, 10-year recurrence interval
30Q20 – 30-day minimum, 20-year recurrence interval
7Q10 – 7-day minimum, 10-year recurrence interval
BAT – best available technology economically achievable
BCT – best conventional pollutant control technology
BDL – below detection level
BOD_5 – five day biochemical oxygen demand
BPT – best practicable control technology currently available
$CBOD_5$ – five day carbonaceous biochemical oxygen demand
CEI – compliance evaluation inspection
CFR – code of federal regulations
CFS – cubic feet per second
CFU – colony forming units
CIU – categorical industrial user
CSO – combined sewer overflow
DMR – discharge monitoring report
D.O. – dissolved oxygen
E. coli – Escherichia coli
EFO – environmental field office
LB(lb) - pound
IC_{25} – inhibition concentration causing 25% reduction in survival, reproduction and growth of the test organisms
IU – industrial user
IWS – industrial waste survey
LC_{50} – acute test causing 50% lethality
MDL – method detection level
MGD – million gallons per day
MG/L(mg/l) – milligrams per liter
ML – minimum level of quantification
ml – milliliter
MLSS – mixed liquor suspended solids
MOR – monthly operating report
NODI – no discharge
NOEC – no observed effect concentration
NPDES – national pollutant discharge elimination system
PL – permit limit
POTW – publicly owned treatment works
RDL – required detection limit
SAR – semi-annual [pretreatment program] report
SIU – significant industrial user
SSO – sanitary sewer overflow

STP – sewage treatment plant
TCA – Tennessee code annotated
TDEC – Tennessee Department of Environment and Conservation
TIE/TRE – toxicity identification evaluation/toxicity reduction evaluation
TMDL – total maximum daily load
TRC – total residual chlorine
TSS – total suspended solids
WQBEL – water quality based effluent limit

D. REPORTING

1. Monitoring Results

Monitoring results shall be recorded monthly and submitted monthly using Discharge Monitoring Report (DMR) forms supplied by the Division of Water Resources. Submittals shall be postmarked no later than 15 days after the completion of the reporting period. A completed DMR with an original signature shall be submitted to the following address:

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
COMPLIANCE & ENFORCEMENT SECTION
William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

A copy of the completed and signed DMR shall be mailed to the Johnson City Environmental Field Office (EFO) at the following address:

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
Johnson City Environmental Field Office
2305 Silverdale Road
Johnson City, Tennessee 37601

A copy should be retained for the permittee's files. In addition, any communication regarding compliance with the conditions of this permit must be sent to the two offices listed above.

The first DMR is due on the 15th of the month following permit effectiveness.

DMRs and any other information or report must be signed and certified by a responsible corporate officer as defined in 40 CFR 122.22, a general partner or proprietor, or a principal municipal executive officer or ranking elected official, or his duly authorized representative. Such authorization must be submitted in writing and must explain the duties and responsibilities of the authorized representative.

The electronic submission of DMR data will be accepted only if formally approved beforehand by the division. For purposes of determining compliance with this permit, data approved by the division to be submitted electronically is legally equivalent to data submitted on signed and certified DMR forms.

2. Additional Monitoring by Permittee

If the permittee monitors any pollutant specifically limited by this permit more frequently than required at the location(s) designated, using approved analytical methods as specified herein, the results of such monitoring shall be included in the calculation and reporting of the values required in the DMR form. Such increased frequency shall also be indicated on the form.

3. Falsifying Results and/or Reports

Knowingly making any false statement on any report required by this permit or falsifying any result may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Water Pollution Control Act, as amended, and in Section 69-3-115 of the Tennessee Water Quality Control Act.

4. Outlier Data

Outlier data include analytical results that are probably false. The validity of results is based on operational knowledge and a properly implemented quality assurance program. False results may include laboratory artifacts, potential sample tampering, broken or suspect sample containers, sample contamination or similar demonstrated quality control flaw.

Outlier data are identified through a properly implemented quality assurance program, and according to ASTM standards (e.g. Grubbs Test, ‘h’ and ‘k’ statistics). Furthermore, outliers should be verified, corrected, or removed, based on further inquiries into the matter. If an outlier was verified (through repeated testing and/or analysis), it should remain in the preliminary data set. If an outlier resulted from a transcription or similar clerical error, it should be corrected and subsequently reported.

Therefore, only if an outlier was associated with problems in the collection or analysis of the samples and as such does not conform with the Guidelines Establishing Test Procedures for the Analysis of Pollutants (40 CFR §136), it can be removed from the data set and not reported on the Discharge Monitoring Report forms (DMRs). Otherwise, all results (including monitoring of pollutants more frequently than required at the location(s) designated, using approved analytical methods as specified in the permit) should be included in the calculation and reporting of the values required in the DMR form. You are encouraged to use “comment” section of the DMR form (or attach additional pages), in order to explain any potential outliers or dubious results.

E. SCHEDULE OF COMPLIANCE

Full compliance and operational levels shall be attained from the effective date of this permit.

PART II

A. GENERAL PROVISIONS

1. Duty to Reapply

Permittee is not authorized to discharge after the expiration date of this permit. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information and forms as are required to the Director of the Division of Water Resources (the "Director") no later than 180 days prior to the expiration date. Such applications must be properly signed and certified.

2. Right of Entry

The permittee shall allow the Director, the Regional Administrator of the U.S. Environmental Protection Agency, or their authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or where records are required to be kept under the terms and conditions of this permit, and at reasonable times to copy these records;

b. To inspect at reasonable times any monitoring equipment or method or any collection, treatment, pollution management, or discharge facilities required under this permit; and

c. To sample at reasonable times any discharge of pollutants.

3. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Water Pollution Control Act, as amended, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Division of Water Resources. As required by the Federal Act, effluent data shall not be considered confidential.

4. Proper Operation and Maintenance

a. The permittee shall at all times properly operate and maintain all facilities and systems (and related appurtenances) for collection and treatment which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory and process controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems, which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit. Backup continuous pH and flow monitoring equipment are not required.

b. Dilution water shall not be added to comply with effluent requirements to achieve BCT, BPT, BAT and/or other technology-based effluent limitations such as those in State of Tennessee Rule 1200-4-5-.09.

5. Treatment Facility Failure

The permittee, in order to maintain compliance with this permit, shall control production, all discharges, or both, upon reduction, loss, or failure of the treatment facility, until the facility is restored or an alternative method of treatment is provided. This requirement applies in such situations as the reduction, loss, or failure of the primary source of power.

6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

7. Severability

The provisions of this permit are severable. If any provision of this permit due to any circumstance, is held invalid, then the application of such provision to other circumstances and to the remainder of this permit shall not be affected thereby.

8. Other Information

If the permittee becomes aware that he failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, then he shall promptly submit such facts or information.

B. CHANGES AFFECTING THE PERMIT

1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or

b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1).

2. Permit Modification, Revocation, or Termination

a. This permit may be modified, revoked and reissued, or terminated for cause as described in 40 CFR 122.62 and 122.64, Federal Register, Volume 49, No. 188 (Wednesday, September 26, 1984), as amended.

b. The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

c. If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established for any toxic pollutant under Section 307(a) of the Federal Water Pollution Control Act, as amended, the Director shall modify or revoke and reissue the permit to conform to the prohibition or to the effluent standard, providing that the effluent standard is more stringent than the limitation in the permit on the toxic pollutant. The permittee shall comply with these effluent standards or prohibitions within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified or revoked and reissued to incorporate the requirement.

d. The filing of a request by the permittee for a modification, revocation, reissuance, termination, or notification of planned changes or anticipated noncompliance does not halt any permit condition.

3. Change of Ownership

This permit may be transferred to another party (provided there are neither modifications to the facility or its operations, nor any other changes which might affect the permit limits and conditions contained in the permit) by the permittee if:

a. The permittee notifies the Director of the proposed transfer at least 30 days in advance of the proposed transfer date;

b. The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage, and liability between them; and

c. The Director, within 30 days, does not notify the current permittee and the new permittee of his intent to modify, revoke or reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

Pursuant to the requirements of 40 CFR 122.61, concerning transfer of ownership, the permittee must provide the following information to the division in their formal notice of intent to transfer ownership: 1) the NPDES permit number of the subject permit; 2) the effective date of the proposed transfer; 3) the name and address of the transferor; 4) the name and address of the transferee; 5) the names of the responsible parties for both the transferor and transferee; 6) a statement that the transferee assumes responsibility for the subject NPDES permit; 7) a statement that the transferor relinquishes responsibility for the subject NPDES permit; 8) the

signatures of the responsible parties for both the transferor and transferee pursuant to the requirements of 40 CFR 122.22(a), “Signatories to permit applications”; and, 9) a statement regarding any proposed modifications to the facility, its operations, or any other changes which might affect the permit limits and conditions contained in the permit.

4. Change of Mailing Address

The permittee shall promptly provide to the Director written notice of any change of mailing address. In the absence of such notice the original address of the permittee will be assumed to be correct.

C. NONCOMPLIANCE

1. Effect of Noncompliance

All discharges shall be consistent with the terms and conditions of this permit. Any permit noncompliance constitutes a violation of applicable State and Federal laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

2. Reporting of Noncompliance

a. 24-Hour Reporting

In the case of any noncompliance which could cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health or the environment, the required notice of non-compliance shall be provided to the Division of Water Resources in the appropriate regional Field Office within 24-hours from the time the permittee becomes aware of the circumstances. (The regional Field Office should be contacted for names and phone numbers of environmental response personnel).

A written submission must be provided within five calendar days of the time the permittee becomes aware of the circumstances, unless this requirement is waived by the Director on a case-by-case basis. The permittee shall provide the Director with the following information:

i. A description of the discharge and cause of noncompliance;

ii. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and

iii. The steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

b. Scheduled Reporting

For instances of noncompliance which are not reported under subparagraph 2.a. above, the permittee shall report the noncompliance on the Discharge Monitoring

Report. The report shall contain all information concerning the steps taken, or planned, to reduce, eliminate, and prevent recurrence of the violation and the anticipated time the violation is expected to continue.

3. Sanitary Sewer Overflow

a. "***Sanitary Sewer Overflow***" means the discharge to land or water of wastes from any portion of the collection, transmission, or treatment system other than through permitted outfalls.

b. Sanitary Sewer Overflows are prohibited.

c. The permittee shall operate the collection system so as to avoid sanitary sewer overflows. No new or additional flows shall be added upstream of any point in the collection system, which experiences chronic sanitary sewer overflows (greater than 5 events per year) or would otherwise overload any portion of the system.

d. Unless there is specific enforcement action to the contrary, the permittee is relieved of this requirement after: 1) an authorized representative of the Commissioner of the Department of Environment and Conservation has approved an engineering report and construction plans and specifications prepared in accordance with accepted engineering practices for correction of the problem; 2) the correction work is underway; and 3) the cumulative, peak-design, flows potentially added from new connections and line extensions upstream of any chronic overflow point are less than or proportional to the amount of inflow and infiltration removal documented upstream of that point. The inflow and infiltration reduction must be measured by the permittee using practices that are customary in the environmental engineering field and reported in an attachment to a Monthly Operating Report submitted to the regional TDEC Field Office. The data measurement period shall be sufficient to account for seasonal rainfall patterns and seasonal groundwater table elevations.

e. In the event that more than five (5) sanitary sewer overflows have occurred from a single point in the collection system for reasons that may not warrant the self-imposed moratorium or completion of the actions identified in this paragraph, the permittee may request a meeting with the Division of Water Resources field office staff to petition for a waiver based on mitigating evidence.

4. Upset

a. "***Upset***" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. An upset shall constitute an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the permittee demonstrates, through properly signed, contemporaneous operating logs, or other relevant evidence that:

i. An upset occurred and that the permittee can identify the cause(s) of the upset;

ii. The permitted facility was at the time being operated in a prudent and workman-like manner and in compliance with proper operation and maintenance procedures;

iii. The permittee submitted information required under "Reporting of Noncompliance" within 24-hours of becoming aware of the upset (if this information is provided orally, a written submission must be provided within five days); and

iv. The permittee complied with any remedial measures required under "Adverse Impact."

5. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

6. Bypass

a. "***Bypass***" is the intentional diversion of wastewater away from any portion of a treatment facility. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypasses are prohibited unless the following 3 conditions are met:

i. The bypass is unavoidable to prevent loss of life, personal injury, or severe property damage;

ii. There are not feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment down-time. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass, which occurred during normal periods of equipment down-time or preventative maintenance;

iii. The permittee submits notice of an unanticipated bypass to the Division of Water Resources in the appropriate environmental assistance center within 24-hours of becoming aware of the bypass (if this information is provided orally, a written submission must be provided within five days). When the need for the bypass is foreseeable, prior notification shall be

submitted to the Director, if possible, at least 10 days before the date of the bypass.

c. Bypasses not exceeding limitations are allowed **only** if the bypass is necessary for essential maintenance to assure efficient operation. All other bypasses are prohibited. Allowable bypasses not exceeding limitations are not subject to the reporting requirements of 6.b.iii, above.

7. Washout

a. For domestic wastewater plants only, a "washout" shall be defined as loss of Mixed Liquor Suspended Solids (MLSS) of 30.00% or more. This refers to the MLSS in the aeration basin(s) only. This does not include MLSS decrease due to solids wasting to the sludge disposal system. A washout can be caused by improper operation or from peak flows due to infiltration and inflow.

b. A washout is prohibited. If a washout occurs the permittee must report the incident to the Division of Water Resources in the appropriate regional Field Office within 24-hours by telephone. A written submission must be provided within 5 days. The washout must be noted on the discharge monitoring report. Each day of a washout is a separate violation.

D. LIABILITIES

1. Civil and Criminal Liability

Except as provided in permit conditions for "**Bypass,**" "**Sanitary Sewer Overflow,**" and "**Upset,**" nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the State of Tennessee, including but not limited to fish kills and losses of aquatic life and/or wildlife, as a result of the discharge of wastewater to any surface or subsurface waters. Additionally, notwithstanding this Permit, it shall be the responsibility of the permittee to conduct its wastewater treatment and/or discharge activities in a manner such that public or private nuisances or health hazards will not be created.

2. Liability Under State Law

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or the Federal Water Pollution Control Act, as amended.

PART III

OTHER REQUIREMENTS

A. TOXIC POLLUTANTS

The permittee shall notify the Division of Water Resources as soon as it knows or has reason to believe:

1. That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, of any toxic substance(s) (listed at 40 CFR 122, Appendix D, Table II and III) which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

    a. One hundred micrograms per liter (100 ug/l);

    b. Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

    c. Five (5) times the maximum concentration value reported for that pollutant(s) in the permit application in accordance with 122.21(g)(7); or

    d. The level established by the Director in accordance with 122.44(f).

2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

    a. Five hundred micrograms per liter (500 ug/l);

    b. One milligram per liter (1 mg/L) for antimony;

    c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 122.21(g)(7); or

    d. The level established by the Director in accordance with 122.44(f).

B. REOPENER CLAUSE

If an applicable standard or limitation is promulgated under Sections 301(b)(2)(C) and (D), 304(B)(2), and 307(a)(2) and that effluent standard or limitation is more stringent than any effluent limitation in the permit or controls a pollutant not limited in the permit, the permit shall be promptly modified or revoked and reissued to conform to that effluent standard or limitation.

C. PLACEMENT OF SIGNS

Within sixty (60) days of the effective date of this permit, the permittee shall place and maintain a sign(s) at each outfall and any bypass/overflow point in the collection system. For the purposes of this requirement, any bypass/overflow point that has discharged five (5) or more times in the last year must be so posted. The sign(s) should be clearly visible to the public from the bank and the receiving stream or from the nearest public property/right-of-way, if applicable. The minimum sign size should be two feet by two feet (2' x 2') with one inch (1") letters. The sign should be made of durable material and have a white background with black letters.

The sign(s) are to provide notice to the public as to the nature of the discharge and, in the case of the permitted outfalls, that the discharge is regulated by the Tennessee Department of Environment and Conservation, Division of Water Resources. The following is given as an example of the minimal amount of information that must be included on the sign:

TREATED INDUSTRIAL WASTEWATER
AGC Flat Glass North America - Greenland Plant
(Permittee's Phone Number)
NPDES Permit NO. TN0002631
TENNESSEE DIVISION OF WATER RESOURCES
1-888-891-8332 ENVIRONMENTAL FIELD OFFICE - Johnson City

D. ANTIDEGRADATION

Pursuant to the Rules of the Tennessee Department of Environment and Conservation, Chapter 0400-40-03-.06, titled “Tennessee Antidegradation Statement,” which prohibits the degradation of high quality surface waters and the increased discharges of substances that cause or contribute to impairment, the permittee shall further be required, pursuant to the terms and conditions of this permit, to comply with the effluent limitations and schedules of compliance required to implement applicable water quality standards, to comply with a State Water Quality Plan or other state or federal laws or regulations, or where practicable, to comply with a standard permitting no discharge of pollutants.

E. BIOMONITORING REQUIREMENTS, CHRONIC

The permittee shall conduct a 3-Brood *Ceriodaphnia dubia* Survival and Reproduction Test and a 7-Day Fathead Minnow *(Pimephales promelas)* Larval Survival and Growth Test on the same samples of final effluent from Outfall 004.

The measured endpoint for toxicity will be the inhibition concentration causing 25% reduction (IC25) in survival, reproduction, or growth of the test organisms. The IC25 shall be determined based on a 25% reduction as compared to the controls. The average reproduction and growth responses will be determined based on the number of *Ceriodaphnia dubia* or *Pimephales promelas* larvae used to initiate the test.

Test shall be conducted and its results reported based on appropriate replicates of a total of five serial dilutions and a control, using the percent effluent dilutions as presented in the following table:

Serial Dilutions for Whole Effluent Toxicity (WET) Testing					
Permit Limit (PL)	**0.50 X PL**	**0.25 X PL**	**0.125 X PL**	**0.0625 X PL**	**Control**
% effluent					
100	**50**	**25**	**12.5**	**6.25**	**0**

The dilution/control water used will be a moderately hard water as described in Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013 (or the most current edition). Results from a chronic standard reference toxicant quality assurance test for each species tested shall be submitted with the discharge monitoring report. Reference toxicant tests shall be conducted as required in EPA-821-R-02-013 (or the most current edition). Additionally, the analysis of this multi-concentration test shall include review of the concentration-response relationship to ensure that calculated test results are interpreted appropriately.

Toxicity will be demonstrated if the IC25 is less than or equal to the permit limit indicated for each outfall in the above table(s). Toxicity demonstrated by the tests specified herein constitutes a violation of this permit.

All tests will be conducted using a minimum of three 24-hour flow-proportionate composite samples of final effluent (e.g., collected on days 1, 3 and 5). If, in any control more than 20% of the test organisms die in 7 days, the test (control and effluent) is considered invalid and the test shall be repeated within 30 days of the date the initial test is invalidated. Furthermore, if the results do not meet the acceptability criteria of section 4.9.1, EPA-821-R-02-013 (or the most current edition), or if the required concentration-response review fails to yield a valid relationship per guidance contained in Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing, EPA-821-B-00-004 (or the most current edition), that test shall be repeated. Any test initiated but terminated before completion must also be reported along with a complete explanation for the termination.

The toxicity tests specified herein shall be conducted annually (1/Year) for Outfall 004 and begin no later than 90 days from the effective date of this permit.

In the event of a test failure, the permittee must start a follow-up test within 2 weeks and submit results from a follow-up test within 30 days from obtaining initial WET testing results. The follow-up test must be conducted using the same serial dilutions as presented in the corresponding table(s) above. **The follow-up test will not negate an initial failed test. In addition, the failure of a follow-up test will constitute a separate permit violation which must also be reported.**

In the event of 2 consecutive test failures or 3 test failures within a 12 month period for the same outfall, the permittee must initiate a Toxicity Identification Evaluation/Toxicity Reduction Evaluation (TIE/TRE) study within 30 days and so notify the division by letter. This notification shall include a schedule of activities for the initial investigation of that outfall. **During the term of the TIE/TRE study, the frequency of biomonitoring shall be once every three**

months. Additionally, the permittee shall submit progress reports once every three months throughout the term of the TIE/TRE study. The toxicity must be reduced to allowable limits for that outfall within 2 years of initiation of the TIE/TRE study. Subsequent to the results obtained from the TIE/TRE studies, the permittee may request an extension of the TIE/TRE study period if necessary to conduct further analyses. The final determination of any extension period will be made at the discretion of the division.

The TIE/TRE study may be terminated at any time upon the completion and submission of 2 consecutive tests (for the same outfall) demonstrating compliance. Following the completion of TIE/TRE study, the frequency of monitoring will return to a regular schedule, as defined previously in this section as well in Part I of the permit. **During the course of the TIE/TRE study, the permittee will continue to conduct toxicity testing of the outfall being investigated at the frequency of once every three months but will not be required to perform follow-up tests for that outfall during the period of TIE/TRE study.**

Test procedures, quality assurance practices, determinations of effluent survival/reproduction and survival/growth values, and report formats will be made in accordance with Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013, or the most current edition.

Results of all tests, reference toxicant information, copies of raw data sheets, statistical analysis and chemical analyses shall be compiled in a report. The report will be written in accordance with Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013, or the most current edition.

Two copies of biomonitoring reports (including follow-up reports) shall be submitted to the division. One copy of the report shall be submitted along with the discharge monitoring report (DMR). The second copy shall be submitted to the local Division of Water Resources office address:

Environmental Field Office - Johnson City
Division of Water Resources
2305 Silverdale Road
Johnson City, TN 37601

F. CERTIFIED OPERATOR

The industrial wastewater treatment facilities must be operated under the supervision of properly trained wastewater collection and treatment system operators.

ADDENDUM TO RATIONALE
AGC Flat Glass North America - Greenland Plant
PERMIT NO. TN0002631

April 30, 2014
Addendum prepared by: Ms. Souraya Fathi

Based on the comments provided by Mr. Bryan Carter, Johnson City's Field Office, during draft permit review, the following changes have been implemented into the final NPDES permit, however, the Division retains the wording of the Rationale as originally published with the Public Notice.

1. The nature of IMP 001A and IMP 002 flows are added in Part I A. (top of limits table).

2. An error in the IMP 001A Oil & Grease limits specified in Part I A. was corrected to match the calculations provided in Rationale Appendix 5a.

3. Part I A. for Outfall 004 IC_{25} monitoring was corrected to reflect the detailed calculation in Part III E. Composite sampling is the appropriate sampling requirement for Outfall IMP004.

4. The following Footnotes in Part IA were accidentally left out of the draft permit:

*** Flow Shall be reported in Million Gallons per Day (MGD).**
**** pH analyses shall be performed within fifteen (15) minutes of sample collection.**
***** The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for TRC shall not exceed 0.05 mg/l unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL and have it available for review upon request. In cases where the permit limit is less that the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit limit.**

5. Part I B. DEFINITIONS been modified to remove unrelated definitions.

6. Part II D.1. reference of **"Overflow"** has been replaced with **"Sanitary Sewer Overflow."**

7. A certified operator requirement was added to Part III F. of the permit in accordance with the Water Environmental Health Act of 1984.

Revision: The following will be added to Part III of the permit.

F. CERTIFIED OPERATOR

The industrial wastewater treatment facilities must be operated under the supervision of properly trained wastewater collection and treatment system operators.

8. The permit contains multiple references to sections of state rule 1200-4-3. These provisions are now codified in state rule 0400-40-03(8).

9. Rationale part VI. (page R-2) indicated incorrectly that the facility did not have appreciable difficulty meeting effluent limitations. However, as shown in Rationale Appendix 4, the facility had frequent excursions above the permit limits for IMP 001 Total Phosphorus and TSS and periodic excursions above permit limits for IMP 002 TSS and E. coli and Outfall 004 pH, TSS, and Oil & Grease.

10. Rationale part VIII. discusses the Oil & Grease limits for Outfall 004, but does not indicate the source of the 10 mg/L monthly average limit specified in Part I A. for this outfall. The following paragraph was, accidentally, left out and should have been included in the draft permit.

    "The permit writer is selecting technology-based limits for oil and grease of 15 mg/L as a daily maximum concentration and 10 mg/L as a monthly average concentration. In addition, the permit will contain language prohibiting visible floating scum, oil or other matter in the wastewater discharge. Sample type will be grab."

11. The WQ calculation spreadsheet discussed in Rationale Appendix 2A, is revised to incorporate available stream assessment data for TSS and Harness.

WATER QUALITY BASED CALCULATIONS FOR METALS AND OTHER TOXIC SUBSTANCES
OUTFALL 004

FACILITY: AGC Flat Glass North America - Greenland Plant
PERMIT #: TN00002631

Stream (7Q10) [MGD]	Stream (30Q5) [MGD]	Waste Flow [MGD]	Ttl. Susp. Solids [mg/l]	Hardness (as CaCO3) [mg/l]	Stream Allocation [%]
0.0	0.0	0.7	10	150	90

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Stream	Fish/Aqua. Life		Effluent	Fish & Aquatic Life Water Quality Criteria (7Q10)				Human Health Water Quality Criteria (30Q5)					
	Bckgrnd.	Water Quality Criteria		Fraction	In-Stream Allowable		Calc. Effluent Concentration		In-Stream Criteria			Calc. Effluent Concentration		
EFFLUENT	Conc.	Chronic	Acute	Dissolved	Chronic	Acute	Chronic	Acute	Organisms	Water/Organisms	DWS	Organisms	Water/Organisms	DWS
CHARACTERISTIC	[ug/l]	[ug/l]	[ug/l]	[Fraction]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]
Chlorine (T. Res.)	0.000	11.000	19.000	1.000	11.000	19.000	**11.0**	**19.0**	NA	NA	NA	**NA**	**NA**	**NA**

* Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness. The Fish & Aquatic Life criteria for this metal are in the dissolved form at laboratory conditions. The in-stream allowable criteria and calculated effluent concentrations are in the total recoverable form.

** The criteria for these parameters are in the total form.

NOTE: Water Quality criteria for stream use classifications other than Fish & Aquatic Life are based on the 30Q5 flow.

Station ID	Activity Start Date	Sus Res	Tot Hrd
HOLST131.5HS	01-13-2000	5	138
HOLST131.5HS	02-16-2000	81	103
HOLST131.5HS	05-10-2000	11	131
HOLST131.5HS	08-09-2000	5	99
HOLST131.5HS	11-08-2000	5	117
HOLST131.5HS	01-16-2001	5	135
HOLST131.5HS	04-03-2001	19	117
HOLST131.5HS	07-17-2001	5	118
HOLST131.5HS	10-09-2001	5	119
HOLST131.5HS	01-15-2002	5	142
HOLST131.5HS	04-16-2002	5	146
HOLST131.5HS	09-24-2002	69	147
HOLST131.5HS	12-11-2002	5	120
HOLST131.5HS	10-05-1999	5	106
HOLST131.5HS	04-01-2008	5	207
HOLST131.5HS	07-08-2008	11	134
HOLST131.5HS	10-22-2008	14	110
HOLST131.5HS	02-09-2000	5	157
HOLST131.5HS	05-19-2009	5	204
HOLST131.5HS	07-22-2009	5	204
HOLST131.5HS	11-09-2009	5	269
HOLST131.5HS	02-23-2010	5	141
HOLST131.5HS	02-23-2010	5	1U
HOLST131.5HS	06-09-2010	5	121
HOLST131.5HS	08-10-2010	5	142
HOLST131.5HS	10-12-2010	5	163
HOLST131.5HS	02-02-2011	5	207
HOLST131.5HS	06-08-2011	5	139
HOLST131.5HS	08-10-2011	5	137
HOLST131.5HS	10-18-2011	5	170
HOLST131.5HS	02-08-2012	5	209
HOLST131.5HS	04-25-2012	5	225
HOLST131.5HS	08-15-2012	5	201
HOLST131.5HS	11-07-2012	5	
HOLST131.5HS	02-12-2013	5	
HOLST131.5HS	03-18-2003	5	129
HOLST131.5HS	07-15-2003	5	108
HOLST131.5HS	10-07-2003	5	145
HOLST131.5HS	01-13-2004	5	125
HOLST131.5HS	04-07-2004	5	133
HOLST131.5HS	07-28-2004	14	140
HOLST131.5HS	10-21-2004	5	109
HOLST131.5HS	01-20-2005	5	114
HOLST131.5HS	04-19-2005	5	141
HOLST131.5HS	07-06-2005	39	144
HOLST131.5HS	10-05-2005	5	146
HOLST131.5HS	01-10-2006	5	207
HOLST131.5HS	04-04-2006	5	253
HOLST131.5HS	07-11-2006	18	122
HOLST131.5HS	10-10-2006	5	137
HOLST131.5HS	01-08-2007	26	200
HOLST131.5HS	04-03-2007	5	146
HOLST131.5HS	07-10-2007	5	125
HOLST131.5HS	10-30-2007	5	131
HOLST131.5HS	01-07-2008	5	168
Total Average:		**9.6**	**150.0**

12. The 30Q5, rather than 30Q2 as indicated in Rationale Appendix 2A (page R-11), is used for critical low flow for criteria other than Fish and Aquatic Life Protection. Therefore, the following equation is revised to the following:

Other than Fish and Aquatic Life Protection
30Q5 - Low flow under natural conditions

SEF

Permit Addendum TN0002631.DOC

RATIONALE

AGC Flat Glass North America - Greenland Plant

NPDES PERMIT NO. TN0002631
Church Hill, Hawkins County, Tennessee

Permit Writer: Ms. Souraya Fathi

I. DISCHARGER

AGC Flat Glass North America - Greenland Plant
600 AFG Road off Hwy 11W
Church Hill, Hawkins County, Tennessee
Site Longitude: -82.768056 Site Latitude: 36.483889

Official Contact Person:
Mr. Steven Rolfe
Environmental Manager
(423) 357-2487

Nature of Business:
Produces flat glass by float glass and tempering.

SIC Code(s):	**3211**
Industrial Classification:	**Secondary, w/ELG**
Discharger Rating:	**Minor**

II. PERMIT STATUS

Issued February 28, 2011
Last modified April 04, 2011
Expired February 27, 2014
Application for renewal received

Watershed Scheduling

Environmental Field Office: Johnson City
Primary Outfall Longitude: -82.772222 Primary Outfall Latitude: 35.499167
Hydrocode: 6010104 Watershed Group: 4
Watershed Identification: Holston
Target Reissuance Year: 2014

III. FACILITY DISCHARGES AND RECEIVING WATERS

AGC Flat Glass North America - Greenland Plant discharges contact process wastewater, treated domestic wastewater, non-contact cooling water and storm water runoff through Outfall 004 to unnamed tributary at mile 0.6 to Holston River at mile 126.5. Appendix 1 summarizes facility discharges and the receiving stream information for Outfall 004.

Storm water discharges associated with the industrial activity of this facility are covered by the Tennessee Multi-Sector General Storm Water Permit TNR050866. Storm water concerns associated with this facility are covered in this general permit and will, therefore, not be addressed in the new permit.

IV. APPLICABLE EFFLUENT LIMITATIONS GUIDELINES

The Standard Industrial Classification (SIC) code for AGC Flat Glass North America - Greenland Plant is 3211 (Float Glass). Process wastewater discharged through Outfall 001A is regulated by 40 CFR Part 426. Appendix 2 lists the applicable best available technology (BAT) and best conventional pollution control technology (BCT) effluent limitations guidelines for Subpart E - Float Glass Manufacturing Subcategory and Subpart F – Automotive Glass Tempering Subcategory.

V. PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

Appendix 3 lists the permit limitations and monitoring requirements as defined in the previous permit.

VI. HISTORICAL MONITORING AND INSPECTION

During the previous permit term, AGC Flat Glass North America - Greenland Plant did not have any appreciable difficulty in meeting effluent limitations as outlined in the previous permit. A summary of the data reported on Discharge Monitoring Report forms during the previous permit term is summarized in Appendix 4.

During the previous permit term, the Division’s personnel from the Johnson City Environmental Field Office performed a Compliance Evaluation Inspection (CEI) of the AGC Flat Glass North America - Greenland Plant. The CEI was performed by Mr. Bryan B. Carter on December 13 and 17, 2012. The inspection report described numerous deficiences, and the facility responded to these deficiencies with a letter dated March 18, 2013 (see Appendix 4A).

VII. NEW PERMIT LIMITS AND MONITORING REQUIREMENTS

The proposed new permit limits have been selected by determining a technology-based limit and evaluating if that limit protects the water quality of the receiving stream. If the technology-based limit would cause violations of water quality, the water quality-based limit is chosen. The technology-based limit is determined from EPA effluent limitations guidelines if applicable (see Part IV); or from State of Tennessee maximum effluent limits for effluent limited

segments per Rule 1200-4-5-.08; or by way of operational and/or treatability data. Furthermore, effluent limitations in this permit must comply with any approved Total Maximum Daily Load (TMDL) studies. Appendix 5 lists all proposed effluent limitations and monitoring requirements to be included in the new permit. Note that in general, the term "anti-backsliding" refers to a statutory provision that prohibits the renewal, reissuance, or modification of an existing NPDES permit that contains effluents limits, permit conditions, or standards that are less stringent than those established in the previous permit.

VIII. METALS AND TOXICS

Effluent permit limits for metals and toxics were determined as shown in Appendix 2A.

Internal Monitoring Point 001A

Internal Monitoring Point (IMP) 001A is used for monitoring of wastewater. Limits were set in case discharge occurs from IMP 001, through Outfall 004 and into the receiving stream. If no discharge occurs the permittee shall mark the "No Discharge" box on the DMRs. All limits for IMP 001A were derived through 40 CFR 426 (See Appendix 5a). Note that in general, the term "anti-backsliding" refers to a statutory provision that prohibits the renewal, reissuance, or modification of an existing NPDES permit that contains effluents limits, permit conditions, or standards that are less stringent than those established in the previous permit.

Internal Monitoring Point 002

Domestic wastewater is treated in the activated sludge package plant before it is discharged through Outfall 004. IMP 002 is used for monitoring of package plant treatment performance, prior to mixing of treated domestic wastewater with wastewater being eventually discharged from Outfall 004.

Flow

Monitoring of flow quantifies the load of pollutants to the stream. Flow shall be reported in Million Gallons per Day (MGD) and monitored at the time of sample collection.

Total Suspended Solids (TSS)

The limits for Total Suspended Solids are in consistent with the State of Tennessee maximum limits per Rule 1200-4-5-.09(1)(a), effluent limitations for municipal and domestic wastewater treatment plants. The limits will be 30 mg/l monthly average concentration and 45 mg/l daily maximum concentration. Considering the nature of wastewater collection and discharge system, the sample type will be grab.

pH

According to the State of Tennessee Water Quality Standards [Chapter 0400-40-03-.03(3) (b)], the pH for the protection of Fish and Aquatic Life shall lie within the range of 6.0 to 9.0 and shall not fluctuate more than 1.0 unit in this range over a period of 24-hours. Considering that the receiving stream will provide some buffering capacity, effluent limitation for pH will be retained in a range 6.0 to 9.0. The sample type will be grab.

BOD5

The limits for BOD5 are in consistent with the State of Tennessee maximum limits per Rule 1200-4-5-.09(1)(a), effluent limitations for municipal and domestic wastewater treatment plants. The limits will be 30 mg/l monthly average concentration and 45 mg/l daily maximum concentration. The sample type will be grab.

Settleable Solids

The limits for Settleable Solids are in consistent with State of Tennessee maximum limits per Rule 1200-4-5-.09(1)(a), effluent limitations for domestic wastewater treatment plants. The limits for Settleable Solids of 0.5 ml/l daily maximum concentration will be retained from the previous permit. The sample type will be grab.

Dissolved Oxygen

The Dissolved Oxygen (DO) limit will be retained from the previous permit. The limit will be 2.0 mg/l as a minimum. The sample type will be grab.

Total Residual Chlorine

The daily maximum limit of 0.5 mg/l for Total Residual Chlorine will be retained from the previous permit.

Outfall 004

Outfall 004 consists of non-contact cooling, storm water runoff, process wastewater (through IMP 001A), and treated domestic wastewater (through IMP 002).

Flow

Monitoring of flow quantifies the load of pollutants to the stream. Flow shall be reported in Million Gallons per Day (MGD) and monitored at the time of sample collection.

pH

According to the State of Tennessee Water Quality Standards [Chapter 0400-40-03-.03(3) (b)], the pH for the protection of Fish and Aquatic Life shall lie within the range of 6.0 to 9.0 and shall not fluctuate more than 1.0 unit in this range over a period of 24-hours. Considering that the receiving stream will provide some buffering capacity, effluent limitation for pH will be retained in a range 6.0 to 9.0.

Oil and Grease

The division has determined that an oil and grease limitation is needed for this facility because of the potential of contamination from spills, leaks and other industrial activities present at the site. The technology-based limit for oil and grease is 15 mg/l as a daily maximum concentration. This level can be accomplished where oil/water separators are maintained, kept clean and are not overloaded. There should be less reliance upon the oil/water separator as a solution and a greater reliance upon good management, operation and housekeeping practices to restrict pollution.

According to the State of Tennessee Water Quality Standards for the protection of Fish & Aquatic Life [Chapter 0400-40-03-.03(3) (c)], there shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits or sludge banks of such size or character that may be detrimental to fish and aquatic life in the receiving stream.

Total Residual Chlorine

The monthly average limit of 0.011 mg/L and the daily maximum limit of 0.019 mg/l for Total Residual Chlorine (TRC) will be retained in the new permit. The new limits are based on the TN Water Quality Standards applied to a low flow stream condition of 0.0 MGD. The background concentration of TRC is assumed to be 0.0 mg/L.

The acceptable methods for analysis of TRC are any methods specified in Title 40 CFR, Part 136 as amended. The method detection level (MDL) for TRC shall not exceed 0.05 mg/l unless the permittee demonstrates that its MDL is higher. The permittee shall retain the documentation that justifies the higher MDL and have it available for review upon request. In cases where the permit limit is less that the MDL, the reporting of TRC at less than the MDL shall be interpreted to constitute compliance with the permit limit. The reportable limit of 0.05 mg/L is higher than the monthly average limit of 0.011 mg/L and the daily maximum limit of 0.019 mg/L for TRC. Therefore, the reportable limit of 0.05 mg/L will effectively be used to demonstrate compliance with the effluent limitations. Please note that any TRC detected at or above the detection level will constitute a violation of the permit.

Total Suspended Solids (TSS)

Total Suspended Solids is a general indicator of the quality of a wastewater and will be limited in this permit. The permit writer's technology-based limit for TSS of 40 mg/l, taken from Tennessee Rule 1200-4-5-.09(1)(a) 1., "Conventional Secondary Treatment Plants."

The State of Tennessee Water Quality Standards for the protection of Fish & Aquatic Life [Chapter 0400-40-03-.03(3) (c)] state there shall be no distinctly visible solids, scum, foam, oily slick, or the formation of slimes, bottom deposits or sludge banks of such size or character that may be detrimental to fish and aquatic life in the receiving stream.

The permit writer believes the limit of 40 mg/L daily maximum concentration will provide protection of water quality in the receiving stream. Considering the nature of wastewater collection and discharge system, the sample type will be grab.

Effluent Temperature

Temperature will be maintained according to the State of Tennessee Water Quality Standards for the protection of Fish & Aquatic Life [Chapter 0400-40-03-.03(3)(e)]. It is recognized that the temperature of the cooling water discharge will be greater than the temperature of the water prior to its use for cooling or other purposes. This discharge must not cause the temperature change in receiving stream to exceed 3°C relative to an upstream control point. Also, this discharge must not cause the temperature of receiving stream to exceed 30.5°C (except as a result of natural causes), and this discharge must not cause the maximum rate of temperature change in receiving stream to exceed 2°C per hour (except as a result of natural causes).

VIII. BIOMONITORING REQUIREMENTS, CHRONIC

The discharge of industrial wastewater from Outfall 004 may contain several different pollutants, the combined effect of which has a reasonable potential to be detrimental to fish and aquatic life. The Tennessee Water Quality Standards criteria stipulates that "*The waters shall not contain toxic substances, whether alone or in combination with other substances, which will produce toxic conditions...*".

Since the permittee discharges to a stream with low critical flow conditions, there is a concern for toxicity effects of the discharge on the receiving stream, which is relatively unknown. Biomonitoring will provide information relative to the toxicity of the discharge. Calculation of toxicity limits is as follows:

$$DF = \frac{Qs + Qw}{Qw} = \text{Dilution Factor}$$

where **Qw** is a wastewater flow (Qw = 0.71 MGD) and **Qs** is a receiving stream low flow (7Q10 estimated at 0.0 MGD). Please refer to Appendix 1 for details regarding facility discharge and receiving stream. Therefore,

$$DF = \frac{0.0 + 0.71}{0.71} = 1.0$$

Since the calculated dilution factor is less than 100:1, and assuming immediate and complete mixing, protection of the stream from chronic effects requires:

$$IWC \leq 1.0 \text{ X } IC25; \text{ or,}$$

$$\text{INHIBITION CONCENTRATION, } 25\% \geq IWC$$

Where IWC is Instream Waste Concentration and is calculated using the following formula:

$$IWC = \frac{Qw}{Qs + Qw} \text{ X } 100 = \text{Instream Waste Concentration}$$

$$IWC = \frac{0.71}{0.0 + 0.71} \times 100 = 100$$

Therefore, WET testing will be required on 100% effluent. If toxicity is demonstrated in any of the effluent samples specified above, this will constitute a violation of this permit.

The toxicity tests specified herein shall be conducted annually (1/Year) for Outfall 004 and begin no later than 90 days from the effective date of this permit.

IX. ANTIDEGRADATION

Tennessee's Antidegradation Statement is found in the Rules of the Tennessee Department of Environment and Conservation, Chapter 0400-40-03-.06. It is the purpose of Tennessee's standards to fully protect existing uses of all surface waters as established under the Act.

Stream determinations for this permit action are associated with the waterbody segment identified by the division as segment ID# **TN06010104011_0999**.

The division has made a determination of the receiving waters associated with the subject discharge(s) and has found the receiving stream to be available conditions waters. Available conditions exist where water quality is better than the applicable criterion for a specific parameter. The applicant has demonstrated to the department that reasonable alternatives to new or increased degradation to the available conditions waters are not feasible.

The department has maintained, and shall continue to assess, the water quality of the stream to assure that the water quality is adequate to protect the existing uses of the stream fully, and to assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

X. PERMIT DURATION

The proposed limitations meet the requirements of Section 301(b)(2)(A), (C), (D), (E), and (F) of the Clean Water Act as amended. It is the intent of the division to organize the future issuance and expiration of this particular permit such that other permits located in the same watershed and group within the State of Tennessee will be set for issuance and expiration at the same time. In order to meet the target reissuance date for the Holston watershed and following the directives for the Watershed Management Program initiated in January, 1996, the permit will be issued to expire in 2019.

APPENDIX 1

FACILITY DISCHARGES AND RECEIVING WATERS

FACILITY DISCHARGES AND RECEIVING WATERS

IMP 001A	
LONGITUDE	LATITUDE
82-46-43	36-29-37

FLOW (MGD)	DISCHARGE SOURCE
0.39	Misc. industrial waste water discharged when sedimentation basin is being cleaned out, or during heavy rainfall events.
0.39	TOTAL DISCHARGE

RECEIVING STREAM DISCHARGE ROUTE			
Internal monitoring point			
STREAM LOW FLOW (CFS) *	7Q10	1Q10	30Q5
(MGD)	0.0	0.0	0.0

STREAM USE CLASSIFICATIONS (WATER QUALITY)				
AQUATIC LIFE	RECREATION	IRRIGATION	LIVESTOCK & WILDLIFE	DOMESTIC SUPPLY
X	X	X	X	
INDUSTRIAL	NAVIGATION			

Treatment: Sedimentation

* Reference: Flow Duration and Low Flows of Tennessee Streams through 1992 by George S. Law and Jess D. Weaver. Water Resources Investigations Report 95-4293 prepared by the U.S. Geological Survey in Cooperation with the Tennessee Department of Environment and Conservation and the Tennessee Valley Authority. Nashville, Tennessee, 1996.

FACILITY DISCHARGES AND RECEIVING WATERS

IMP 002	
LONGITUDE	LATITUDE
82-46-25	36-29-25

FLOW (MGD)	DISCHARGE SOURCE
0.02	Sanitary waste water from packaged plant.
0.02	TOTAL DISCHARGE

RECEIVING STREAM DISCHARGE ROUTE			
Internal monitoring point			
STREAM LOW FLOW (CFS) *	7Q10	1Q10	30Q5
	0.0	0.0	0.0
(MGD)	0.0	0.0	0.0

AQUATIC LIFE	RECREATION	IRRIGATION	LIVESTOCK & WILDLIFE	DOMESTIC SUPPLY
X	X	X	X	
INDUSTRIAL	NAVIGATION			

Treatment: Activated sludge package plant

* Reference: Flow Duration and Low Flows of Tennessee Streams through 1992 by George S. Law and Jess D. Weaver. Water Resources Investigations Report 95-4293 prepared by the U.S. Geological Survey in Cooperation with the Tennessee Department of Environment and Conservation and the Tennessee Valley Authority. Nashville, Tennessee, 1996.

FACILITY DISCHARGES AND RECEIVING WATERS

OUTFALL 004	
LONGITUDE	LATITUDE
82-46-20	36-29-57

FLOW (MGD)	DISCHARGE SOURCE
0.71	Misc. industrial waste water from 001A. sanitary waste water from Outfall 002. Non contact cooling water and storm water runoff.
0.71	TOTAL DISCHARGE

RECEIVING STREAM DISCHARGE ROUTE			
Unnamed tributary @ mile 0.6 to the Holston River @ mile 126.5			
STREAM LOW FLOW (CFS) *	7Q10	1Q10	30Q5
	0.0	0.0	0.0
(MGD)	0.0	0.0	0.0

STREAM USE CLASSIFICATIONS (WATER QUALITY)				
AQUATIC LIFE	RECREATION	IRRIGATION	LIVESTOCK & WILDLIFE	DOMESTIC SUPPLY
X	X	X	X	
INDUSTRIAL	NAVIGATION			

Treatment: pH adjustment (neutralization)

* Reference: Flow Duration and Low Flows of Tennessee Streams through 1992 by George S. Law and Jess D. Weaver. Water Resources Investigations Report 95-4293 prepared by the U.S. Geological Survey in Cooperation with the Tennessee Department of Environment and Conservation and the Tennessee Valley Authority. Nashville, Tennessee, 1996.

APPENDIX 2

APPLICABLE EFFLUENT LIMITATIONS GUIDELINES

40 CFR PART 426

SUBPART E - FLOAT GLASS MAUFACTURING SUBCATEGORY

EFFLUENT CHARACTERISTIC	BPT PART 426.52 MO. AVG. lb/ton product	BPT PART 426.52 DAILY MAX. lb/ton product	BAT PART 426.53 MO. AVG. lb/ton product	BAT PART 426.53 DAILY MAX. lb/ton product
TSS	0.004	0.004	NA	NA
Oil	0.0028	0.0028	NA	NA
Phosphorus	0.0001	0.0001	0.0001	0.0001
pH	6.0 - 9.0		NA	

SUBPART F - AUTOMOTIVE GLASS TEMPERING SUBCATEGORY

EFFLUENT CHARACTERISTIC	BPT PART 426.62 MO. AVG. lb/1000 sq ft product	BPT PART 426.62 DAILY MAX. lb/1000 sq ft product	BAT PART 426.63* MO. AVG. lb/1000 sq ft product	BAT PART 426.63* DAILY MAX. lb/1000 sq ft product
TSS	0.25	0.4	NA	NA
Oil	0.13	0.13	NA	NA
pH	6.0 - 9.0		NA	

* Part 426.63 is reserved

APPENDIX 2A

METALS AND TOXICS CONSIDERATIONS

The following procedure is used to calculate the allowable instream concentrations for pass-through guidelines and permit limitations.

a. The most recent background conditions of the receiving stream segment are compiled. This information includes:

   * 7Q10 of receiving stream (0.0 MGD, USGS)
   * Calcium hardness (50 mg/l, default)
   * Total suspended solids (10 mg/l, default)
   * Background metals concentrations (½ water quality criteria)
   * Other dischargers impacting this segment (none)
   * Downstream water supplies, if applicable

b. The chronic water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel and zinc. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions.

c. The acute water quality criteria are converted from total recoverable metal at lab conditions to dissolved lab conditions for the following metals: cadmium, copper, trivalent chromium, lead, nickel, zinc and silver. Then translators are used to convert the dissolved lab conditions to total recoverable metal at ambient conditions for the following metals: cadmium, copper, lead, nickel and silver.

d. The resulting allowable trivalent and hexavalent chromium concentrations are compared with the effluent values characterized as total chromium on permit applications. If reported total chromium exceeds an allowable trivalent or hexavalent chromium value, then the calculated value will be applied in the permit for that form of chromium unless additional effluent characterization is received to demonstrate reasonable potential does not exist to violate the applicable state water quality criteria for chromium.

e. A standard mass balance equation determines the total allowable concentration (permit limit) for each pollutant. This equation also includes a percent stream allocation of no more than 90%.

   The following formulas are used to evaluate water quality protection:

$$Cm = \frac{QsCs + QwCw}{Qs + Qw}$$

where:

Cm = resulting in-stream concentration after mixing
Cw = concentration of pollutant in wastewater
Cs = stream background concentration
Qw = wastewater flow
Qs = stream low flow

to protect water quality:

$$Cw \leq \frac{(S_A)\,[Cm\,(Qs + Qw) - QsCs]}{Qw}$$

where (S_A) is the percent “Stream Allocation”.

Calculations for this permit have been done using a standardized spreadsheet, titled "Water Quality Based Effluent Calculations." Division policy dictates the following procedures in establishing these permit limits:

1. The critical low flow values are determined using USGS data:

   Fish and Aquatic Life Protection
   7Q10 - Low flow under natural conditions
   1Q10 - Regulated low flow conditions

   Other than Fish and Aquatic Life Protection
   30Q2 - Low flow under natural conditions

2. Fish & Aquatic Life water quality criteria for certain Metals are developed through application of hardness dependent equations. These criteria are combined with dissolved fraction methodologies in order to formulate the final effluent concentrations.

3. For criteria that are hardness dependent, chronic and acute concentrations are based on a Hardness of 25 mg/L and Total Suspended Solids (TSS) of 10 mg/L unless STORET or Water Supply intake data substantiate a different value. Minimum and maximum limits on the hardness value used for water quality calculations are 25 mg/L and 400 mg/L respectively. The minimum limit on the TSS value used for water quality calculations is 10 mg/L.

4. Background concentrations are determined from the division database, results of sampling obtained from the permittee, and/or obtained from nearby stream sampling data. If this background data is not sufficient, one-half of the chronic “In-stream Allowable” water quality criteria for fish and aquatic life is used. If the measured background concentration is greater than the chronic “In-stream Allowable” water quality criteria, then the measured background concentration is used in lieu of the chronic “In-stream Allowable” water quality criteria for the purpose of calculating the appropriate effluent limitation (Cw). Under these circumstances, and in the event the “stream allocation” is less than 100%, the calculated chronic effluent limitation for fish and aquatic life should be equal to the chronic “In-stream Allowable” water quality criteria. These guidelines should be strictly followed where the industrial source water is not the receiving stream. Where the industrial source water is the receiving stream, and the measured background concentration is greater than the chronic “In-stream Allowable”

water quality criteria, consideration may be given as to the degree to which the permittee should be required to meet the requirements of the water quality criteria in view of the nature and characteristics of the receiving stream.

The spreadsheet has fifteen (15) data columns, all of which may not be applicable to any particular characteristic constituent of the discharge. A description of each column is as follows:

Column 1: The "Stream Background" concentrations of the effluent characteristics.

Column 2: The "Chronic" Fish and Aquatic Life Water Quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Continuous Concentration (CCC) is calculated using the equation:

$$CCC = (\exp \{ m_C [\ln (\text{stream hardness})] + b_C \}) (CCF)$$

CCF = Chronic Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 0400-40-03-.03 and the EPA guidance contained *in The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent; no chronic criterion exists for silver. Published criteria are used for non-metal parameters.

Column 3: The "Acute" Fish and Aquatic Life Water Quality criteria. For cadmium, copper, trivalent chromium, lead, nickel, silver, and zinc, this value represents the criteria for the dissolved form at laboratory conditions. The Criteria Maximum Concentration (CMC) is calculated using the equation:

$$CMC = (\exp \{ m_A [\ln (\text{stream hardness})] + b_A \}) (ACF)$$

ACF = Acute Conversion Factor

This equation and the appropriate coefficients for each metal are from Tennessee Rule 0400-40-03-.03 and the EPA guidance contained in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996). Values for other metals are in the total form and are not hardness dependent. Published criteria are used for non-metal parameters.

Column 4: The “Fraction Dissolved” converts the value for dissolved metal at laboratory conditions (columns 2 & 3) to total recoverable metal at in-stream ambient conditions (columns 5 & 6). This factor is calculated using the linear partition coefficients found in *The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From a Dissolved Criterion* (EPA 823-B-96-007, June 1996) and the equation:

$$\frac{C_{diss}}{C_{total}} = \frac{1}{1 + \{ [K_{po}] [ss^{(1+a)}] [10^{-6}] \}}$$

ss = in-stream suspended solids concentration [mg/l]

Linear partition coefficients for streams are used for unregulated (7Q10) receiving waters, and linear partition coefficients for lakes are used for regulated (1Q10) receiving waters. For those parameters not in the dissolved form in columns 2 & 3 (and all non-metal parameters), a Translator of 1 is used.

Column 5: The "Chronic" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 2 by the value in column 4.

Column 6: The "Acute" Fish and Aquatic Life Water Quality criteria at in-stream ambient conditions. This criteria is calculated by dividing the value in column 3 by the value in column 4.

Column 7: The "Chronic" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the chronic limit.

Column 8: The "Acute" Calculated Effluent Concentration for the protection of fish and aquatic life. This is the acute limit.

Column 9: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Organism Consumption (Recreation).

Column 10: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Water and Organism Consumption. These criteria are only to be applied when the stream use classification for the receiving stream includes both “Recreation” and “Domestic Water Supply.”

Column 11: The In-Stream Water Quality criteria for the protection of Human Health associated with the stream use classification of Domestic Water Supply.

Column 12: The Calculated Effluent Concentration associated with Organism Consumption.

Column 13: The Calculated Effluent Concentration associated with Water and Organism Consumption.

Column 14: The Calculated Effluent Concentration associated with Domestic Water Supply.

The calculated chronic water quality effluent concentrations from Column 7 should be compared, individually, to the values calculated in Columns 12, 13, and 14 in order to determine the most stringent chronic permit limitations. The calculated acute water quality effluent concentrations from Column 8 should then be compared, individually, to values equal to two (2) times the values presented in Columns 12, 13, and 14 in order to determine the most stringent acute permit limitations. These water quality based limits should then be compared to any technology based (CFR or Tennessee "Rules") effluent limitations, and/or any previous permit limitations, for final determination of the permit limits.

WATER QUALITY BASED CALCULATIONS FOR METALS AND OTHER TOXIC SUBSTANCES
OUTFALL 004

FACILITY: AGC Flat Glass North America - Greenland Plant
PERMIT #: TN00002631

Stream (7Q10)	Stream (30Q5)	Waste Flow	Ttl. Susp. Solids	Hardness (as CaCO3)	Stream Allocation
[MGD]	[MGD]	[MGD]	[mg/l]	[mg/l]	[%]
0.0	0.0	0.7	10	50	90

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Stream	Fish/Aqua. Life		Effluent	Fish & Aquatic Life Water Quality Criteria (7Q10)				Human Health Water Quality Criteria (30Q5)					
	Bckgrnd.	Water Quality Criteria		Fraction	In-Stream Allowable		Calc. Effluent Concentration		In-Stream Criteria			Calc. Effluent Concentration		
EFFLUENT	Conc.	Chronic	Acute	Dissolved	Chronic	Acute	Chronic	Acute	Organisms	Water/Organisms	DWS	Organisms	Water/Organisms	DWS
CHARACTERISTIC	[ug/l]	[ug/l]	[ug/l]	[Fraction]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]
Chlorine (T. Res.)	0.000	11.000	19.000	1.000	11.000	19.000	**11.0**	**19.0**	NA	NA	NA	NA	NA	NA

* Denotes metals for which Fish & Aquatic Life Criteria are expressed as a function of total hardness. The Fish & Aquatic Life criteria for this metal are in the dissolved form at laboratory conditions. The in-stream allowable criteria and calculated effluent concentrations are in the total recoverable form.

** The criteria for these parameters are in the total form.

NOTE: Water Quality criteria for stream use classifications other than Fish & Aquatic Life are based on the 30Q5 flow.

APPENDIX 3

PREVIOUS PERMIT LIMITS AND MONITORING REQUIREMENTS

Description : Internal Outfall, Number : 001, Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Flow	Report	-	Mgal/d	Instantaneous	Five Per Week	Daily Maximum
Flow	Report	-	Mgal/d	Instantaneous	Five Per Week	Monthly Average
Oil & Grease	<=	33.13	lb/d	Grab	Twice Per Month	Daily Maximum
Oil & Grease	<=	33.13	lb/d	Grab	Twice Per Month	Monthly Average
Phosphorus, total (as P)	<=	0.12	lb/d	Grab	Twice Per Month	Daily Maximum
Phosphorus, total (as P)	<=	0.12	lb/d	Grab	Twice Per Month	Monthly Average
Total Suspended Solids (TSS)	<=	33.48	lb/d	Grab	Twice Per Month	Monthly Average
Total Suspended Solids (TSS)	<=	50.45	lb/d	Grab	Twice Per Month	Daily Maximum
pH	>=	6.0	SU	Grab	Twice Per Month	Minimum
pH	<=	9.0	SU	Grab	Twice Per Month	Maximum

Description : Internal Outfall, Number : 002, Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
BOD, 5-day, 20 C	<=	30	mg/L	Grab	Twice Per Month	Monthly Average
BOD, 5-day, 20 C	<=	45	mg/L	Grab	Twice Per Month	Daily Maximum
Chlorine, total residual (TRC)	<=	0.5	mg/L	Grab	Twice Per Month	Daily Maximum
E. coli	<=	941	#/100mL	Grab	Twice Per Month	Daily Maximum
E. coli	<=	126	#/100mL	Grab	Twice Per Month	Monthly Average
Flow	Report	-	Mgal/d	Instantaneous	Weekly	Daily Maximum

Flow	Report	-	Mgal/d	Instantaneous	Weekly	Monthly Average
Oxygen, dissolved (DO)	>=	2	mg/L	Grab	Five Per Week	Minimum
Settleable Solids	<=	0.5	mL/L	Grab	Twice Per Month	Daily Maximum
Total Suspended Solids (TSS)	<=	45	mg/L	Grab	Twice Per Month	Daily Maximum
Total Suspended Solids (TSS)	<=	30	mg/L	Grab	Twice Per Month	Monthly Average
pH	>=	6.0	SU	Grab	Weekly	Minimum
pH	<=	9.0	SU	Grab	Weekly	Maximum

Description : External Outfall, Number : 004, Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Chlorine, total residual (TRC)	<=	0.011	mg/L	Grab	Weekly	Monthly Average
Chlorine, total residual (TRC)	<=	0.019	mg/L	Grab	Weekly	Daily Maximum
Flow	Report	-	Mgal/d	Instantaneous	Five Per Week	Monthly Average
Flow	Report	-	Mgal/d	Instantaneous	Five Per Week	Daily Maximum
IC25 Static Renewal 7 Day Chronic Ceriodaphnia	>=	100	%	Grab	Annual	Minimum
IC25 Static Renewal 7 Day Chronic Pimephales	>=	100	%	Grab	Annual	Minimum
Oil & Grease	<=	15	mg/L	Grab	Twice Per Month	Daily Maximum
Oil & Grease	<=	10	mg/L	Grab	Twice Per Month	Monthly Average
Settleable Solids	<=	0.5	mL/L	Grab	Weekly	Daily Maximum
Temperature, water deg. C	Report	-	deg C	Grab	Twice Per Month	Daily Maximum
Total Suspended Solids (TSS)	<=	30	mg/L	Grab	Twice Per Month	Monthly Average
Total Suspended Solids (TSS)	<=	40	mg/L	Grab	Twice Per Month	Daily Maximum
pH	>=	6.0	SU	Grab	Five Per Week	Minimum
pH	<=	9.0	SU	Grab	Five Per Week	Maximum

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION

TN0054640 (IMP 001)

Monitoring period	Flow MAvg	Flow DMax	pH Min	pH Max	TSS Mavg lb/d	TSS Dmax lb/d	O&G Mavg lb/d	O&G Dmax, lb/d	Phosphorus, total [as P] , Mavg, lb/d	Phosphorus, total [as P] , Dmax, lb/d
Permit limit	MGD	MGD	6.0	9.0	33.48	50.45	33.13	33.13	0.12	0.12
04/30/2011	0.385	0.583	6.8	7.5	4.5	4.9	19	19.5	0.04	0.05
05/31/2011	0.398	0.496	6.4	8	17	30.6	20.7	21.9	0.07	0.08
06/30/2011	0.418	0.496	6.8	7.5	3.2	3.5	18.3	19.5	0.04	0.06
07/31/2011	0.429	0.496	7.4	8.1	10.8	10.8				**0.14**
08/31/2011	0.415	0.496	7.1	8.9	10.3	14.3			**0.16**	**0.49**
09/30/2011	0.421	0.496	7.8	8.2	9.2	10.1			0.07	0.08
10/31/2011	0.37	0.417	7.2	7.8	11.7	18.2			0.05	0.05
11/30/2011	0.369	0.782	7.1	8.6	15	15			0.08	0.10
12/31/2011	0.361	1.2	7.2	7.7	7.7	12.9			0.07	0.09
01/31/2012	0.311	0.597	6.6	8.8					0.06	0.09
02/29/2012	0.299	0.347	6.8	7.9	14.2	23.7			**0.24**	**0.45**
03/31/2012	0.295	0.347	7.4	7.6	13.6	27.2			0.06	0.06
04/30/2012	0.296	0.347	7.2	7.2	7.8	7.8			0.11	**0.16**
05/31/2012	0.335	1.018	7.4	8.2	8.2	8.3			0.10	**0.19**
06/30/2012	0.338	0.347	7.4	8	12.5	14.5			0.03	0.04
07/31/2012	0.385	0.579	7.2	8.1	11.7	18.8			**0.13**	**0.18**
08/31/2012	0.362	0.417	7.2	8.1	12.3	18.8			0.05	0.06
09/30/2012	0.595	4.425	7.4	8.7	27.5	48.7			**0.20**	**0.29**
10/31/2012	0.408	0.417	7.6	8.1	7.7	7.7			0.09	0.09
11/30/2012	0.411	0.496	7.6	8.4	8.2	10.1			**0.25**	**0.34**
12/31/2012	0.451	1.292	7.2	8.4	**110.2**	**215.1**			0.09	**0.14**
01/31/2013	0.34	1.792	7.2	8.2					0.03	0.03
02/28/2013	0.39	0.537	7.8	8.4	17.4	17.4			**0.19**	**0.33**
03/31/2013	0.384	0.417	8	8.4	14.1	22.61	24.34	24.34	0.04	0.04
04/30/2013	0.388	0.417	7.6	8.5	8.52	8.69			**0.18**	**0.19**
05/31/2013	0.402	0.496	7.2	7.8					0.06	0.09
06/30/2013	0.425	0.579	7.2	7.9	**59.12**	**59.12**			**0.18**	**0.22**
07/31/2013	0.406	0.496	7.2	8.4	**39.65**	**52.17**			**0.22**	**0.32**
08/31/2013	0.451	0.496	7	8	19.44	19.44			**0.20**	**0.30**
09/30/2013	0.422	1.018	7.2	8.3					0.10	0.10
10/31/2013	0.411	0.496	6.8	8.2					**0.13**	**0.16**

	Flow MAvg	Flow DMax	pH Min	pH Max	TSS Mavg, lb/d	TSS Dmax, lb/d	O&G Mavg, lb/d	O&G Dmax, lb/d	Phosphorus, total [as P], Mavg, lb/d	Phosphorus, total [as P], Dmax, lb/d
Permit limit	MGD	MGD	6.0	9.0	33.48	50.48	33.13	33.13	0.12	0.12
Average	0.39	0.74	7.2	8.1	18.5	26.9	20.6	21.3	0.11	0.16
Minimum	0.30	0.35	6.40	7.20	3.20	3.50	18.30	19.50	0.03	0.03
Maximum	0.595	4.425	8.00	8.90	110	215	24	24	0.25	0.49
Exceedances	NA	NA	**0**	**0**	**3**	**3**	**0**	**0**	**11**	**15**
Count	31	31	31	31	26	26	4	4	30	31

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION

TN0002631 (IMP 002)

Monitoring period	Flow MAvg	Flow DMax	pH Min	pH Max	TSS Mavg	TSS Dmax	BOD, 5-day, 20 deg. C , Mavg	BOD, 5-day, 20 deg. C , Dmax	Solids, settleable DMax	Chlorine, total residual, DMax	E. coli, MAvg	E. coli, DMax	Oxygen, dissolved [DO] , Minimum
Permit limit	MGD	MGD	6.0	9.0	30	45	30.0	45.0	0.5	0.5	126.0	941.0	2.0
04/30/2011	0.02	0.02	6.5	7.0	13	13	5.0	5.0	0.1	0.3	3.0	3.0	4.3
05/31/2011	0.01	0.02	6.0	7.1	13	13	5.0	5.0	0.1	0.3	2.0	2.0	4.9
06/30/2011	0.01	0.02	6.2	6.9	12.6	18	5.0	5.0	0.1	0.3	63.5	84.0	4.6
07/31/2011	0.01	0.03	6.6	7.0	7.5	9.6			0.1	0.3	8.2	68.0	4.6
08/31/2011	0.01	0.01	6.5	8.5	13	16		14.0	0.1	0.3		26.0	4.3
09/30/2011	0.01	0.02	6.5	7.6	14.5	16			0.1	0.3		49.9	4.4
10/31/2011	0.01	0.01	6.6	7.1	11.8	12			0.1	0.4	76.5	130.0	4.4
11/30/2011	0.11	0.17	6.7	7.2	16.5	17			0.1	0.3		56.9	4.9
12/31/2011	0.01	0.02	6.6	9.0	**30.3**	**64**		6.6	0.1	0.3	**484.5**	**2400.0**	4.9
01/31/2012	0.01	0.03	6.7	7.1	10.9	12			0.1	0.3	10.0	20.0	5.0
02/29/2012	0.01	0.02	6.6	7.2	10.2	11			0.1	0.2	1.0	1.0	4.9
03/31/2012	0.01	0.02	6.8	7.0	12	13			0.1	0.3	1.0	2.0	4.6
04/30/2012	0.01	0.03	6.6	7.0	7.2	8			0.1	0.3	11.6	15.0	4.9
05/31/2012	0.01	0.02	6.6	6.9	8.3	9.7			0.1	0.3	72.7	88.0	4.5
06/30/2012	0.01	0.01	6.5	7.1	20	25			0.1	0.2	**144.9**	150.0	4.2
07/31/2012	0.02	0.05	6.6	7.0	15.7	24			0.1	0.4	14.3	**1300.0**	4.4
08/31/2012	0.01	0.02	6.5	7.0	19.5	29			0.1	0.5	1.0	1.0	4.7
09/30/2012	0.01	0.02	6.6	8.0	17.5	18			0.1	0.5	62.9	110.0	4.8
10/31/2012	0.01	0.02	6.6	7.0	9.6	12			0.1	0.4	9.4	88.0	4.2
11/30/2012	0.01	0.04	6.4	7.4	14.5	17			0.1	0.4	37.0	38.0	4.3
12/31/2012	0.01	0.01	6.5	6.8	10.8	14			0.1	0.4	4.2	18.0	3.8
01/31/2013	0.02	0.04	6.7	7.2	23.5	27			0.1	0.3	1.0	1.0	4.2
02/28/2013	0.01	0.01	6.9	8.1	7.1	8.8	5.0	5.0	0.1	0.3	2.5	3.0	5.5
03/31/2013	0.01	0.03	6.6	7.4	2.4	3.1			0.1	0.4	2.8	4.0	5.1
04/30/2013	0.02	0.04	6.6	7.3	8	8			0.1	0.3	21.9	40.0	4.9
05/31/2013	0.03	0.05	6.8	8.0	12	12			0.1	0.3	4.2	6.0	4.5
06/30/2013	0.03	0.05	7.3	7.9	10.5	11	5.0	5.0	0.1	0.3	**411.1**	650.0	4.4
07/31/2013													
08/31/2013	0.01	0.02	7.3	8.2	8.6	12	5.0	5.0	0.1	0.3	18.4	34.0	4.4
09/30/2013													
10/31/2013	0.01	0.02	6.7	8.2	4.6	5.2			0.1	0.4	0.0	0.0	5.0

	Flow MAvg	Flow DMax	pH Min	pH Max	TSS MAvg	TSS DMax	BOD, 5-day, 20 deg. C , Mavg	BOD, 5-day, 20 deg. C , Dmax	Solids, Settleable DMax	Chlorine, total residual , DMax	E. coli, MAvg	E. coli, DMax	Oxygen, dissolved [DO], Minimum
Permit limit	MGD	MGD	6.0	9.0	30	45	30.0	45.0	0.5	0.5	126.0	941.0	2.0
Average	0.02	0.03	6.6	7.4	12.6	15.8	5.0	6.3	0.1	0.3	56.5	185.8	4.6
Minimum	0.01	0.01	6.0	6.8	2.4	3.1	5.0	5.0	0.1	0.2	0.0	0.0	3.8
Maximum	0.11	0.17	7.3	9.0	30.3	64.0	5.0	14.0	0.1	0.5	484.5	2400.0	5.5
Exceedances	NA	NA	0	0	1	1	0	0	0	0	3	2	29
Count	29	29	29	29	29	29	6	8	29	29	26	29	29

APPENDIX 4

HISTORICAL MONITORING AND INSPECTION

TN0002631 (Outfall 004)

Monitoring period	Flow MAvg	Flow DMax	pH Min	pH Max	TSS Mavg	TSS Dmax	O&G MAvg	O&G DMax	TRP3B IC25 Chrceriodaphnia	TRP6C IC25 Chrpimephales	Solids, settleable DMax	Temperature, water deg. centigrade, Dmax
Permit limit	MGD	MGD	6.0	9.0	30	40	10	15	100.0	100.0	0.5	
04/30/2011	0.89	2.61	6.8	8.6	2.3	2.4	5.6	5.6			0.1	22.7
05/31/2011	0.62	1.38	6.2	8.2	7.2	11.0	5.6	5.6			0.1	24.5
06/30/2011	0.54	0.61	6.3	8.5	2.0	2.1	5.5	5.6			0.1	25.1
07/31/2011	0.57	1.38	7.0	8.3	1.7	2.4	5.5	5.6			0.1	26.0
08/31/2011	0.62	1.38	7.0	8.7	1.1	1.1	5.5	5.6			0.1	25.4
09/30/2011	0.70	1.96	7.0	8.6	2.8	2.8	5.5	5.6			0.1	23.4
10/31/2011	0.53	0.66	7.4	8.2	1.8	1.8	**29.5**	**44**			0.1	21.0
11/30/2011	0.87	4.00	7.5	8.8	2.6	2.9	5.5	5.6			0.1	19.1
12/31/2011	0.98	7.78	7.0	9	11.8	17.0	5.5	5.6			0.1	15.8
01/31/2012	0.57	0.88	6.8	6.8	2.3	2.3	5.5	5.6			0.1	14.8
02/29/2012	0.66	1.39	7.0	8.4	1.7	1.8	5.5	5.6			0.1	15.6
03/31/2012	0.59	1.00	6.8	8.5	2.4	2.6	5.5	5.6			0.1	20.5
04/30/2012	0.61	1.39	7.2	8.4	1.9	2.4	5.5	5.6			0.1	21.0
05/31/2012	0.79	5.83	7.0	**9.1**	4.3	6.7	5.5	5.6			0.1	24.6
06/30/2012	0.64	1.67	7.0	8.6	2.8	3.2	5.5	5.6			0.1	24.3
07/31/2012	0.81	1.96	7.2	8.6	4.5	7.8	5.5	5.6			0.1	25.4
08/31/2012	0.67	0.88	7.2	8.4	15.1	28.0	5.5	5.6			0.2	23.5
09/30/2012	1.01	10.15	7.2	8.8	3.7	6.3	5.5	5.6			0.1	26.7
10/31/2012	0.65	1.13	7.2	8.4	2.0	2.3	5.5	5.6			0.1	21.3
11/30/2012	0.62	0.66	6.9	8.5	3.9	6.3	5.5	5.6			0.1	19.4
12/31/2012	0.91	5.05	6.9	8.8	3.3	4.5	5.5	5.6	100.0	100.0	0.1	17.7
01/31/2013	0.91	4.94	7.2	**9.3**	1.9	2.1	5.5	5.6			0.1	14.8
02/28/2013	0.72	1.96	7.8	8.4	10.1	13.0	5.5	5.6			0.1	14.3
03/31/2013	0.80	1.38	6.9	8.5	3.4	3.4	5.5	5.6			0.1	14.7
04/30/2013	0.77	1.96	7.2	**9.7**	**56.4**	**110.0**	5.5	5.6			0.1	19.6
05/31/2013	0.68	1.96	7.1	8.5	3.8	4.6	5.5	5.6			0.1	23.0
06/30/2013												
07/31/2013												
08/31/2013	0.59	1.38	6.8	8.5	5.1	5.1	5.5	5.6			0.1	24.0
09/30/2013												
10/31/2013	0.54	0.66	7.0	7.7	4.1	4.1	5.5	5.6			0.1	22.8

	Flow MAvg	Flow DMax	pH Min	pH Max	TSS MAvg	TSS DMax	O&G MAvg	O&G DMax	BOD, 5-day, 20 deg. C , Mavg	BOD, 5-day, 20 deg. C , Dmax	Solids, Settleable DMax	Temperature, water deg. centigrade, Dmax
Permit limit	MGD	MGD	6.0	9.0	30	40	10	15	100.0	100.0	0.5	
Average	0.71	2.43	7.0	8.5	5.9	9.3	6.4	7.0	100.0	100.0	0.1	21.1
Minimum	0.53	0.61	6.2	6.8	1.1	1.1	5.5	5.6	100.0	100.0	0.1	14.3
Maximum	1.01	10.15	7.8	9.7	56.4	110.0	29.5	44.0	100.0	100.0	0.2	26.7
Exceedances	**NA**	**NA**	**0**	**3**	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**NA**
Count	28	28	28	28	28	28	28	28	1	1	28	28

APPENDIX 4A

INSPECTION REPORT

RECEIVED
MAR 2 0 2013
JOHNSON CITY ENVIRONMENTAL
FIELD OFFICE

AGC

AGC Flat Glass North America, Inc.
Greenland Plant
600 AFG Road
Church Hill, TN 37642
Phone: 423-357-2400
Fax: 423-357-2476

March 18, 2013

Mrs. Christina Morgan
Tennessee Department of Environmental and Conservation
Division of Water Pollution Control
401 Church Street 6th Floor L&C Annex
Nashville, TN 37243-1534

RE: Compliance Evaluation Inspection
Storm Water Non-Construction Non-Sampling Inspection AGC Flat Glass North America - Greenland Plant NPDES Permit TN0002631
Tennessee Storm Water Multi-Sector General Permit for Industrial Activities (TMSP) TNROS 1221

Dear Mrs. Morgan:

This letter is to address the findings from a recent inspection and to submit to the division a plan to rectify each finding.

l. Monthly Discharge Monitoring Reports (DMRS) submitted to the division show numerous violations of the Total Phosphorus limitations specified in NPDES permit Part I A. for internal outfall 001. Facility efforts toward identifying the cause and resolving the violations must continue.

- Action plan – A process has been established and is being maintained where all mop water from the janitorial staff is containerized, sampled by an outside lab, then sent offsite for disposal. We have also conducted numerous random sampling both internal and external locations at the facility to try and determine the source of the phosphorus. We will continue to look and test for the possible source. ONGOING

2. No sign was in place at internal outfall 002. An outfall sign meeting the requirements of permit Part III C. must be placed and maintained at each facility outfall.

- Action plan – A sign has been installed at each outfall. COMPLETE - 3/2/2013

3. The individual primarily responsible for laboratory analyses performed onsite, Mr. Paul McKenzie, indicated that he taps the outside of the Imhoff cone after 45 minutes during settleable solids tests. This is not consistent with the procedures in Standard Method 2540 F-1997, which specify gentle agitation of the sample near the sides of the cone with a rod or by spinning. Analyses must be performed in accordance with methods prescribed in Title 40 CFR Part 136 as required by NPDES permit Part I B_3.

- Action plan – Identified issues have been corrected and will be performed in accordance with the regulations and the standard method as required by our permit. COMPLETE – 3/4/2013

4. Mr. McKenzie indicated that temperature readings for outfall 004 effluent were performed using the thermometer in the pH meter and probe in the onsite laboratory. However, he indicated the calibration of this equipment had not been checked against a NIST-certified precision thermometer in some time. Standard Method 2550 B-2000 requires periodic checks. Analyses must be performed in accordance with methods prescribed in Title 40 CFR Part 136 as required by NPDES permit Part I B.3.

- Action plan – Identified issues have been corrected and will be performed in accordance with the regulations and the standard method as required by our permit. Instruments will be calibrated by an outside vendor, and a PM program for regular calibration of equipment will be established and documented to insure compliance. All records will be maintained. OPEN: COMPLETION DATE - 5/31/2013

5. The equipment used for dissolved oxygen (D.O.) readings at internal outfall 002 is calibrated using barometric pressure. However, the barometer used onsite had not been calibration checked and certified in an indeterminate period of time. If this type of calibration is to be employed for D.O. measurement equipment, a certified barometer must be used to obtain the readings. Also note that such D.O. meter calibrations must be based on uncorrected local barometric pressure rather than corrected (to sea level) readings. Further, documentation of the barometric pressure and meter reading should be maintained. Analyses must be performed in accordance with methods prescribed in Title 40 CFR Part 136 as required by NPDES permit Part I B3., and records must be kept in accordance with Part I B_4. Proper equipment operation and maintenance is required by Part II A.4.

- Action plan – Identified issues have been corrected and will be performed in accordance with the regulations and the standard method as required by our permit. Instruments will be calibrated by an outside vendor, and a PM program for regular calibration of equipment will be established and documented to insure

compliance. All records will be maintained. OPEN: COMPLETION DATE – 5/31/2013

6. No records were available during the inspection to document calibration check of the internal outfall 002 flow measurement equipment in some time. Mr. McKenzie indicated the equipment likely had not been checked in over a year. F low equipment (e. g., v-notch Weir, ultrasonic level sensor, and associated electronics) must be checked for proper placement and calibration in order to ensure acceptable measurement accuracy. Accurate flow reporting is necessary for compliance with NPDES permit Part I A., and proper equipment operation and maintenance is required by Part II A.4. The flow calculation and totalizer system must be included in these checks. Such checks should be performed at least annually.

- Action plan - Instruments will be calibrated by an outside vendor, and a PM program for regular calibration of equipment will be established and documented to insure compliance. All records will be maintained. OPEN: COMPLETION DATE – 5/31/2013

7. Mr. McKenzie indicated that flow level measurements for internal outfall 001 are obtained at the v-notch Weir plate and those for outfall 004 are sometimes obtained at the downstream end of the converging section of the flume. Based on available flow measurement references such as the Isco Open Channel Flow Measurement Handbook, 6th Edition, neither of these measurement locations is appropriate for the types of primary devices (i. e., Weir and flume) in place at these outfalls. Flow level readings should be made at appropriate locations in order to ensure acceptable accuracy of flow reporting. Accurate flow reporting is necessary for compliance with NPDES permit Part I A.

- Action plan - All required testing will be performed in accordance with the regulations and the standard method as required by our permit. All records will be maintained. A copy of Isco Open Channel Flow Measurement Handbook has been purchased to assist us in identifying the correct location for flow level readings. OPEN: COMPLETION DATE – 5/31/2013

8. In part, TMSP Sector E requires identification of exposed materials, potential pollutant sources, and identification and implementation of appropriate control measures to minimize contact of materials to and mobilization in storm water runoff. The SWPPP notes the presence of cullet and raw materials onsite and indicates little to no risk of storm Water contamination, but does not appear to address the potential for solids mobilization in storm Water runoff. Inspection of the site revealed the presence of substantial amounts of cullet, aggregate, and other raw materials stored outside or spilled into locations where they may be mobilized in storm water runoff from the facility. An apparent storm drain outside the HT3 loading dock was nearly full of

sediment at the time of this inspection, and mobilized material from numerous cullet piles was noted around the site. Thus, existing control measures and procedures do not appear to be effective in controlling discharge of solids in storm Water runoff from the site. The SWPPP and identified control measures and procedures must be modified to adequately address the requirements of TMSP TNR051221.

- Action plan – Storm water plan along with control measures have been updated to address the need to control solids. Drain at loading dock will be cleaned out of debris. SWPPP - COMPLETE – 3/5/2013

  Drain – OPEN: COMPLETION DATE – 5/31/2013

9. The facility storm water pollution prevention plan (SWPPP) indicates employee training will be performed annually. No records were available during this inspection to document that the training had been performed as required by TMSP Part 11.E.3.2.3.5 since August 2010. Records for December 2011 were provided after the onsite inspection, but included only a limited number of personnel. Training of all facility personnel involved in storm water pollution prevention must be performed in accordance with permit requirements.

- Action plan – Storm water training will be expanded to include maintenance and cullet line personnel, and documented to ensure compliance. OPEN: COMPLETION DATE – 4/30/2013

10. Propane and bulk lubricant drums are stored in a diked concrete containment area in front of the main plant. Runoff from this area enters a sump and is to be inspected for possible contamination before draining. At the time of inspection, the drain valve on the piping from the sump was open and unattended. Thus, the containment effectiveness of this area was compromised, and potential existed for contamination of storm water runoff and the surrounding area. Also, there was some evidence of spillage in an adjacent chemical storage building, but the material did not appear to have exited the building.

- Action plan – Will re-train employee(s) responsible for conducting this PM. All records will be documented to ensure compliance. COMPLETE – 3/1/2013

If you have any questions concerning this reply, please contact me at (423) 357-2487.

Sincerely,

Steven Rolfe
Environmental Manager
Cc: B. Carter TDEC Water Pollution Control/Johnson City

APPENDIX 5a

NEW PERMIT LIMITS AND MONITORING REQUIREMENTS

Water Quality Based Effluent Calculations

Calculation of Effluent Limited Guidelines
IMP 001A & Outfall 004
AFG Industries, Inc. - Greenland Plant

		Historical Production	Effluent Limitation			
			Monthly Average		Daily Maximum	
		[tons/day]	[lb/ton]	[lb/day]	[lb/1000 lb]	[lb/day]
SUBPART E - FLOAT GLASS MANUFACTURING SUBCATEGORY	TSS	1,300	0.0040	5.2	0.0040	5.2
	Oil	1,300	0.0028	3.6	0.0028	3.6
	Phosphorus	1,300	0.0001	0.1	0.0001	0.1
SUBPART F - AUTOMOTIVE GLASS TEMPERING SUBCATEGORY		(ft^2/day)	[lb/1000ft^2]	[lb/day]	[lb/1000 lb]	[lb/day]
	TSS	113,134	0.25	28.3	0.40	45.3
	Oil	113,134	0.13	14.7	0.13	14.7
	--	0.00	0.00	0.00	0.00	0.00
Total Mass	**TSS**			**33.48**		**50.45**
	Oil			**18.35**		**18.35**
	Phosphorus			**0.13**		**0.13**

APPENDIX 5b

New Permit Limits

Description : Internal Outfall, Number : 001A, Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Flow	Report	-	Mgal/d	Instantaneous	Five Per Week	Daily Maximum
Flow	Report	-	Mgal/d	Instantaneous	Five Per Week	Monthly Average
Oil & Grease	<=	33.13	lb/d	Grab	Twice Per Month	Daily Maximum
Oil & Grease	<=	33.13	lb/d	Grab	Twice Per Month	Monthly Average
Phosphorus, total (as P)	<=	0.12	lb/d	Grab	Twice Per Month	Daily Maximum
Phosphorus, total (as P)	<=	0.12	lb/d	Grab	Twice Per Month	Monthly Average
Total Suspended Solids (TSS)	<=	33.48	lb/d	Grab	Twice Per Month	Monthly Average
Total Suspended Solids (TSS)	<=	50.45	lb/d	Grab	Twice Per Month	Daily Maximum
pH	>=	6.0	SU	Grab	Twice Per Month	Minimum
pH	<=	9.0	SU	Grab	Twice Per Month	Maximum

Description : Internal Outfall, Number : 002, Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
BOD, 5-day, 20 C	<=	30	mg/L	Grab	Twice Per Month	Monthly Average
BOD, 5-day, 20 C	<=	45	mg/L	Grab	Twice Per Month	Daily Maximum
Chlorine, total residual (TRC)	<=	0.5	mg/L	Grab	Twice Per Month	Daily Maximum
E. coli	<=	941	#/100mL	Grab	Twice Per Month	Daily Maximum
E. coli	<=	126	#/100mL	Grab	Twice Per Month	Monthly Average
Flow	Report	-	Mgal/d	Instantaneous	Weekly	Daily Maximum
Flow	Report	-	Mgal/d	Instantaneous	Weekly	Monthly Average
Oxygen, dissolved (DO)	>=	2	mg/L	Grab	Five Per Week	Minimum
Settleable Solids	<=	0.5	mL/L	Grab	Twice Per Month	Daily Maximum
Total Suspended Solids (TSS)	<=	45	mg/L	Grab	Twice Per Month	Daily Maximum
Total Suspended Solids (TSS)	<=	30	mg/L	Grab	Twice Per Month	Monthly Average
pH	>=	6.0	SU	Grab	Weekly	Minimum
pH	<=	9.0	SU	Grab	Weekly	Maximum

Description : External Outfall, Number : 004, Monitoring : Effluent Gross, Season : All Year

Parameter	Qualifier	Value	Unit	Sample Type	Frequency	Statistical Base
Chlorine, total residual (TRC)	<=	0.011	mg/L	Grab	Weekly	Monthly Average
Chlorine, total residual (TRC)	<=	0.019	mg/L	Grab	Weekly	Daily Maximum
Flow	Report	-	Mgal/d	Instantaneous	Five Per Week	Monthly Average
Flow	Report	-	Mgal/d	Instantaneous	Five Per Week	Daily Maximum
IC25 Static Renewal 7 Day Chronic Ceriodaphnia	>=	100	%	Grab	Annual	Minimum
IC25 Static Renewal 7 Day Chronic Pimephales	>=	100	%	Grab	Annual	Minimum
Oil & Grease	<=	15	mg/L	Grab	Twice Per Month	Daily Maximum
Oil & Grease	<=	10	mg/L	Grab	Twice Per Month	Monthly Average
Settleable Solids	<=	0.5	mL/L	Grab	Weekly	Daily Maximum
Temperature, water deg. C	Report	-	deg C	Grab	Twice Per Month	Daily Maximum
Total Suspended Solids (TSS)	<=	30	mg/L	Grab	Twice Per Month	Monthly Average
Total Suspended Solids (TSS)	<=	40	mg/L	Grab	Twice Per Month	Daily Maximum
pH	>=	6.0	SU	Grab	Five Per Week	Minimum
pH	<=	9.0	SU	Grab	Five Per Week	Maximum